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(71)Applicant : TOYO INK MFG CO LTD

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(72)Inventor : OKUTSU SATOSHI
ONIKUBO SHIYUNICHI
TAMANO MICHIKO
ENOKIDA TOSHIO

(54) ORGANIC ELECTROLUMINESCENCE ELEMENT MATERIAL AND ORGANIC ELECTROLUMINESCENCE ELEMENT USING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To achieve high luminescence efficiency, by incorporating a compound containing a five-membered heterocyclic ring into at least one layer of an organic electroluminescence element which is composed of a plurality of organic compound thin layers, including a luminescent layer, placed between a pair of electrodes.

SOLUTION: N,N'-(3-methylphenyl)-N,N'-diphenyl-1,1'-biphenyl-4,4'-diamine is deposited by vacuum deposition on a glass plate with an ITO electrode, to thereby form a positive hole injection layer having a film thickness of about 20nm. On the layer, a compound containing a 5-membered heterocyclic ring represented by the formula:

wherein each of X1 to X3 represents N, CH or a carbon atom bonded to Ar1 or Ar2, each of Ar1 and Ar2 is an arylene group, each of Ar3 to Ar5 is H, a cyano group or the like and each of m and n is 0 to 4, is laminated by vapor deposition, to thereby form a luminescent layer having a thickness of about 40nm. Then, tris (8-hydroxyquinoline)aluminum complex is laminated by vapor deposition to thereby form an electron injection layer, having a thickness of about 30nm. Further, on the organic layers, an electrode of Mg/Ag alloy is formed with a thickness of about 100nm. An organic electroluminescence element is thus obtained.



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